CLAIMS

Sub Q1

1/ A method of managing traffic for a virtual connection of a packet-based communications network, said method consisting in:

transmitting packets from source customer-premises equipment to destination customer-premises equipment;

time-division multiplexing the packets coming from the various source customer-premises equipment;

measuring the data-rate of the multiplexed packets;

temporarily storing said multiplexed packets in a queue;

transmitting said stored packets over said virtual connection;

determining a channel utilization factor related to the rate at which packets are transmitted over said virtual connection towards said destination customer-premises equipment; and

transmitting said channel utilization factor to data-rate management means so as to control the send information rate upstream from said multiplexing;

said channel utilization factor taking into account the length of said queue and the time taken to transmit said factor to said data-rate management means so as to prevent said queue from overflowing.

2/ A method according to claim 1, wherein said channel utilization factor is a piece of information guaranteeing that the following relationship is satisfied:

$$\sum_{i} SIR_{i,t} \leq k_{TM} * TR$$

where $SIR_{i,t}$ is the rate at which the packets are sent into the network for a virtual connection i at time t, TR is the rate at which packets are transmitted over the virtual connection towards destination items of customer-premises equipment, and k_{TM} is equal to:

$$k_{TM} = 1 + \frac{FIFO_{over}}{(RTD+CMP) * \lambda * TR}$$

where $FIFO_{over}$ is the number of packets that can be stored in said queue, RTD is the time taken by a packet to make a round trip over said communications network, CMP is the time of measurement of the instantaneous data-rate over the virtual connection, and λ is a constant greater than 1 taking into account the response times of the components of said communications network.

3/ A method according to claim 2, wherein λ is equal to 2.

4/ A method according to claim 1, wherein said channel utilization factor is inserted into the packets transmitted towards said destination customer-premises equipment.

5/ A method according to claim 1, wherein said channel utilization factor is transmitted in a special empty packet towards said destination customer-premises equipment in the absence of return traffic.